Space Weather Highlights
12 March - 18 March 2018

SWPC PRF 2220
19 March 2018

Solar activity was very low throughout the period. The only numbered regions were 2701 (S12, L=99, class/area=Axx/10 on 15 March) and 2702 (N22, L=109, class/area=Bxo/5 on 17 March). Neither region managed any flare activity. No Earth-directed CMEs were observed during the period.

No proton events were observed at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit was at high levels on 16-18 March. Normal levels were observed on 12-15 March.

Geomagnetic field activity reached G2-Moderate storm levels on 18 March and active levels on 14-17 March due to the influence of a negative polarity CH HSS. Quiet to unsettled levels were observed throughout the rest of the week.

Space Weather Outlook
19 March - 14 April 2018

Solar activity is expected to be at very low levels throughout the outlook period.

No proton events are expected at geosynchronous orbit.

The greater than 2 MeV electron flux at geosynchronous orbit is expected to be high levels on 19-20, 22-26 March, and 12-14 April. Normal to moderate levels are expected for the rest of the period.

Geomagnetic field activity is likely to be at G1 (Minor) storm levels on 19 March and 12 April with active periods likely on 20-24 March and 11, 13-14 April, due to effects of multiple recurrent CH HSSs. Quiet to unsettled levels are expected for the remainder of the outlook period.

Daily Solar Data

Date	Radio Flux 10.7cm	Sun spot No.	Sunspot Area (10^{-6} hemi.)	X-ray Background	Flux		Flares						
							X-ray			Optical			
							C	M	X	S	1	2	3	4
12 March	68	0	0	A0.0	0	0	0	0	0	0	0	0		
13 March	69	0	0	A0.0	0	0	0	0	0	0	0	0		
14 March	68	0	0	A0.0	0	0	0	0	0	0	0	0		
15 March	69	11	10	A0.0	0	0	0	0	0	0	0	0		
16 March	69	0	0	A0.0	0	0	0	0	0	0	0	0		
17 March	70	15	10	A0.0	0	0	0	0	0	0	0	0		
18 March	69	13	10	A0.0	0	0	0	0	0	0	0	0		

Daily Particle Data

Date	Proton Fluence (protons/cm ^{2} -day -sr)			Electron Fluence (electrons/cm^2 -day -sr)		
	>1 MeV	>10 MeV	>100 MeV	>0.6 MeV	>2MeV	>4 MeV
12 March	2.3e+05	1.6e+04	3.5e+03		1.9e+06	
13 March	2.2e+05	1.6e+04	3.7e+03		1.2e+06	
14 March	7.9e+05	1.7e+04	3.7e+03		4.9e+05	
15 March	7.6e+05	1.6e+04	3.6e+03		5.8e+06	
16 March	1.9e+06	1.6e+04	3.4e+03		2.1e+08	
17 March	5.3e+05	1.5e+04	3.3e+03		2.2e+08	
18 March	1.8e+06	1.6e+04	3.5e+03		1.6e+08	

Daily Geomagnetic Data

Date	Middle Latitude Fredericksburg		High Latitude College		Estimated Planetary	
	A	K-indices	A	K-indices	A	K-indices
12 March	2	1-0-0-1-2-1-1-0	0	0-0-0-0-1-0-0-0	3	1-0-0-1-1-1-1-0
13 March	3	0-1-1-1-1-1-1-1	3	0-0-1-3-2-0-0-0	4	0-1-2-1-1-1-1-0
14 March	6	0-0-1-1-2-3-2-3	11	0-0-1-2-2-5-3-2	9	1-0-1-1-1-4-3-4
15 March	13	4-2-2-3-2-2-3-3	20	3-2-3-5-2-5-3-2	15	4-3-2-3-1-3-3-4
16 March	17	3-4-3-3-3-3-3-3	40	3-4-6-6-5-5-3-2	20	3-4-3-3-3-4-3-4
17 March	10	4-2-2-2-2-1-2-3	14	3-2-3-4-4-2-2-2	13	4-3-3-2-2-1-2-3
18 March	16	3-2-0-1-4-3-3-5	33	3-1-2-4-6-6-4-4	15	3-3-1-1-3-4-5-6

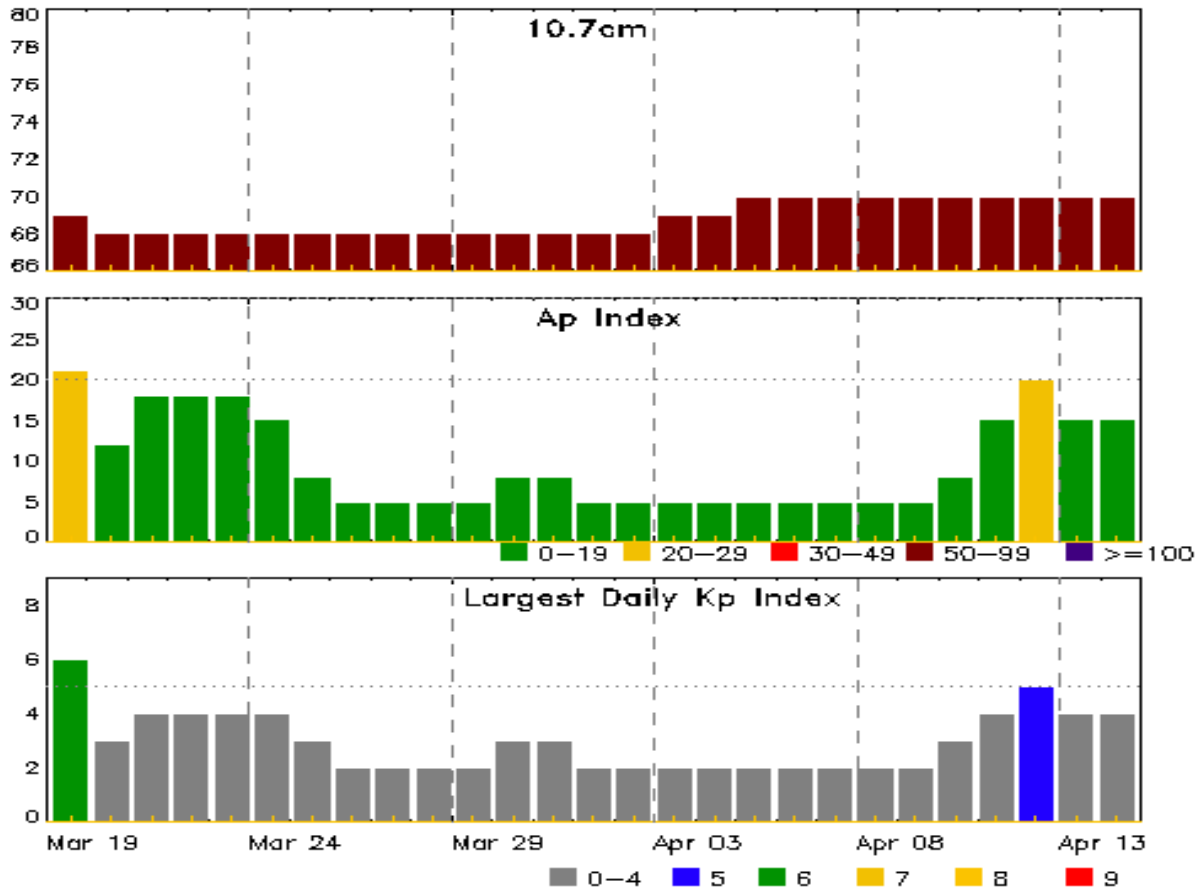
Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
12 Mar 1908	WATCH: Geomagnetic Storm Category G1 predicted	
14 Mar 1435	WARNING: Geomagnetic K = 4	14/1435 - 2100
14 Mar 1723	ALERT: Geomagnetic K = 4	14/1723
14 Mar 1728	WARNING: Geomagnetic K = 5	14/1726 - 2100
14 Mar 2215	WARNING: Geomagnetic K = 4	14/2215 - 15/1200
15 Mar 0006	ALERT: Geomagnetic K = 4	14/2359
15 Mar 0207	WARNING: Geomagnetic K = 5	15/0210 - 1500
15 Mar 0308	CANCELLATION: Geomagnetic K = 5	
15 Mar 0309	WARNING: Geomagnetic K = 5	15/0308 - 1200
15 Mar 1618	WARNING: Geomagnetic K = 4	15/1617 - 2100
15 Mar 2040	EXTENDED WARNING: Geomagnetic K = 4	15/1617 - 16/0300
15 Mar 2358	ALERT: Geomagnetic K = 4	15/2356
16 Mar 0121	ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/0105
16 Mar 0207	EXTENDED WARNING: Geomagnetic K = 4	15/1617 - 16/1200
16 Mar 0501	WARNING: Geomagnetic K = 5	16/0500 - 1200
16 Mar 1148	EXTENDED WARNING: Geomagnetic K = 4	15/1617 - 16/1800
16 Mar 1548	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/0105
16 Mar 1723	EXTENDED WARNING: Geomagnetic K = 4	15/1617 - 17/0600
17 Mar 0138	WARNING: Geomagnetic K = 5	17/0136 - 0600
17 Mar 0524	EXTENDED WARNING: Geomagnetic K = 4	15/1617 - 17/1200
17 Mar 0744	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/0105
17 Mar 2229	WARNING: Geomagnetic K = 4	17/2230 - 18/0300
18 Mar 0859	CONTINUED ALERT: Electron 2MeV Integral Flux >= 1000pfu	16/0105
18 Mar 1429	WARNING: Geomagnetic K = 4	18/1430 - 2359
18 Mar 1630	ALERT: Geomagnetic K = 4	18/1630
18 Mar 2047	WARNING: Geomagnetic K = 5	18/2047 - 2359
18 Mar 2052	ALERT: Geomagnetic K = 5	18/2052

Alerts and Warnings Issued

Date & Time of Issue UTC	Type of Alert or Warning	Date & Time of Event UTC
18 Mar 2136	ALERT: Geomagnetic K = 5	18/2136
18 Mar 2141	WARNING: Geomagnetic K = 6	18/2141 - 19/0300
18 Mar 2141	EXTENDED WARNING: Geomagnetic K = 4	18/1430 - 19/1200
18 Mar 2141	EXTENDED WARNING: Geomagnetic K = 5	18/2047 - 19/0600
18 Mar 2200	ALERT: Geomagnetic K = 6	18/2159

Twenty-seven Day Outlook



Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index	Date	Radio Flux 10.7cm	Planetary A Index	Largest Kp Index
19 Mar	69	21	6	02 Apr	68	5	2
20	68	12	3	03	69	5	2
21	68	18	4	04	69	5	2
22	68	18	4	05	70	5	2
23	68	18	4	06	70	5	2
24	68	15	4	07	70	5	2
25	68	8	3	08	70	5	2
26	68	5	2	09	70	5	2
27	68	5	2	10	70	8	3
28	68	5	2	11	70	15	4
29	68	5	2	12	70	20	5
30	68	8	3	13	70	15	4
31	68	8	3	14	70	15	4
01 Apr	68	5	2				

Energetic Events

	Time			X-ray		Optical Information			Peak Radio Flux		Sweep Freq Intensity	
Date	Begin	Max	Half Max	Class	Integ Flux	Imp/ Brtns	Location Lat CMD	Rgn #	245	2695	II	IV

No Events Observed

Flare List

	Time				Optical		
Date	Begin	Max	End	X-ray Class	Imp/ Brtns	Location Lat CMD	Rgn #
12 Mar	2210	2211	2212	A1.1			

Region Summary

	Location		Sunspot Characteristics					Flares							
		Helio	Area	Extent	Spot	Spot	Mag	X-ray			Optical				
Date	Lat CMD	Lon	10^{-6} hemi.	(helio)	Class	Count	Class	C	M	X	S	1	2	3	4
			Region 2701												
15 Mar	S12W08	99	10		Axx	1	A								
16 Mar	S12W22	100	plage												
17 Mar	S12W36	101	plage												
18 Mar	S12W50	102	plage												
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 99

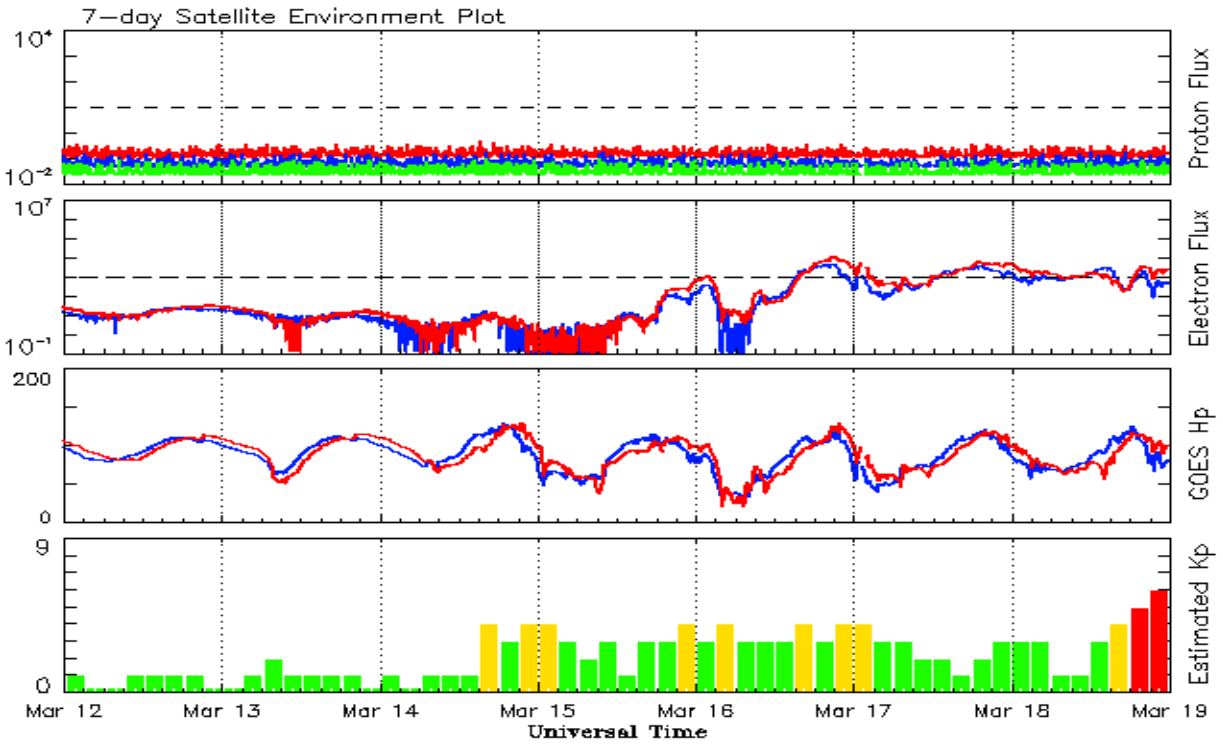
			Region 2702												
17 Mar	N21W47	112	10	3	Bxo	5	B								
18 Mar	N19W60	112	10	4	Bxo	3	B								
								0	0	0	0	0	0	0	0

Still on Disk.
Absolute heliographic longitude: 112

Recent Solar Indices (preliminary)
Observed monthly mean values

	Sunspot Numbers					Radio Flux		Geomagnetic	
	Observed values		Ratio	Smooth values		Penticton	Smooth	Planetary	Smooth
Month	SEC	RI	RI/SEC	SEC	RI	10.7 cm	Value	Ap	Value
				2016					
March	40.9	32.5	0.80	47.7	30.2	91.6	96.6	11	11.8
April	39.2	22.7	0.58	45.0	28.7	93.4	95.3	10	11.8
May	48.9	30.9	0.64	42.1	26.9	93.1	93.2	12	11.7
June	19.3	12.3	0.65	39.0	24.9	81.9	90.4	9	11.4
July	36.8	19.4	0.53	36.5	23.1	85.9	87.7	10	11.2
August	50.4	30.1	0.60	34.2	21.6	85.0	85.5	10	11.2
September	37.4	26.8	0.72	32.1	19.9	87.8	83.7	16	11.3
October	30.0	20.0	0.67	31.1	18.9	86.1	82.5	16	11.6
November	22.4	12.8	0.57	29.4	17.9	78.7	81.1	10	11.6
December	17.6	11.1	0.64	28.1	17.1	75.1	80.0	10	11.4
				2017					
January	28.1	15.7	0.55	27.3	16.7	77.4	79.4	10	11.3
February	22.0	15.8	0.71	25.5	15.9	76.9	78.7	10	11.3
March	25.4	10.6	0.42	24.6	15.4	74.6	78.6	15	11.5
April	30.4	19.4	0.64	24.3	14.9	80.9	78.4	13	11.5
May	18.1	11.3	0.62	23.1	14.0	73.5	77.7	9	11.3
June	18.0	11.5	0.64	22.0	13.3	74.8	77.3	7	11.3
July	18.8	10.7	0.59	20.8	12.6	77.7	76.8	9	11.0
August	25.0	19.6	0.80	19.7	11.7	77.9	76.3	12	10.7
September	42.2	26.2	0.62			92.0		19	
October	16.0	7.9	0.49			76.4		11	
November	7.7	3.4	0.44			72.1		11	
December	7.6	4.9	0.64			71.5		8	
				2018					
January	7.8	4.0	0.51			70.0		6	
February	16.0	6.4	0.40			72.0		7	

Note: Values are final except for the most recent 6 months which are considered preliminary. Cycle 24 started in Dec 2008 with an RI=1.7.



Weekly Geosynchronous Satellite Environment Summary
Week Beginning 12 March 2018

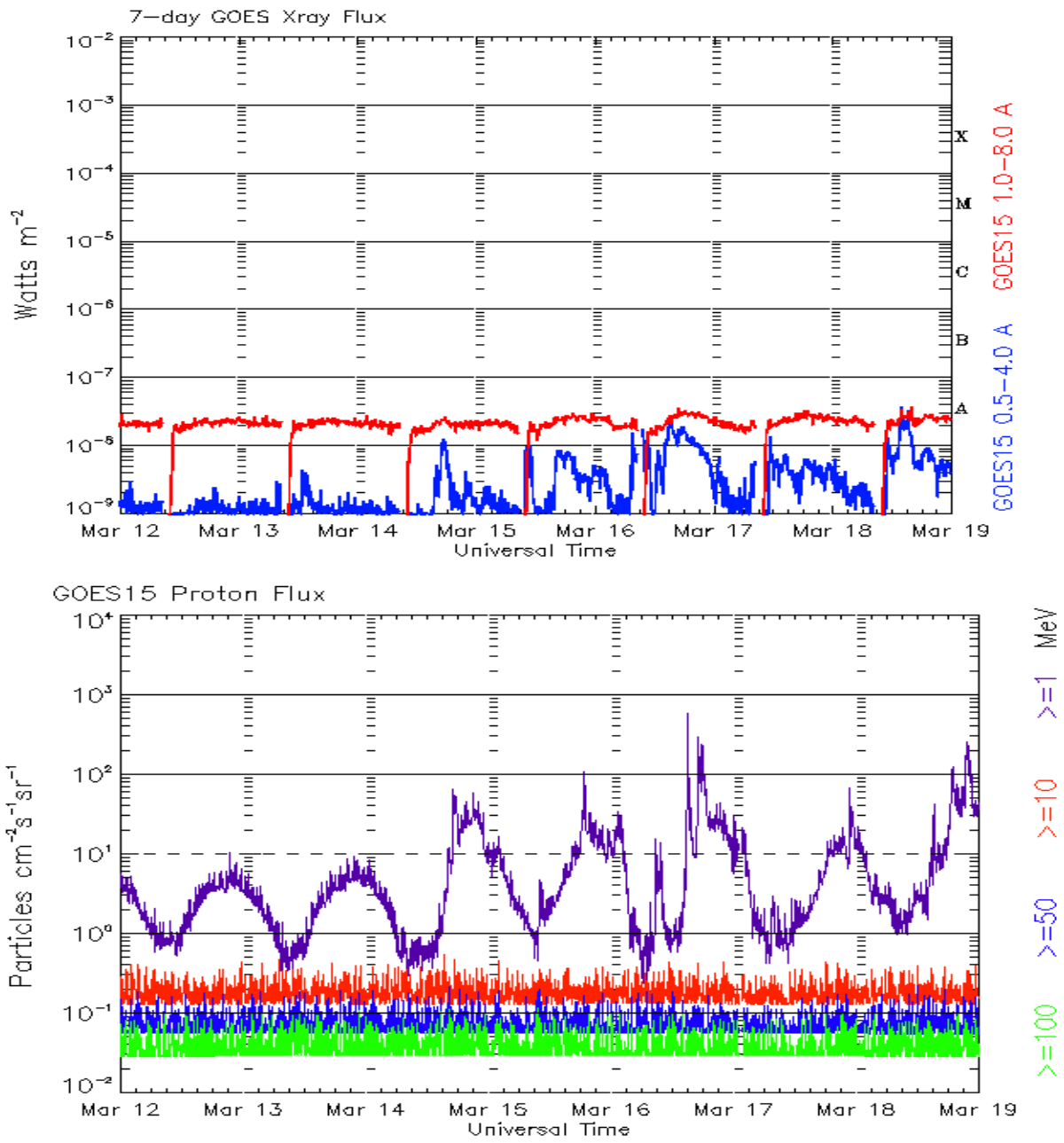
The proton flux plot contains the five-minute averaged integral proton flux (protons/cm^2-sec -sr) as measured by the SWPC Primary GOES satellite, near West 75, for each of three energy thresholds: greater than 10, 50, and 100 MeV.

The electron flux plot contains the five-minute averaged integral electron flux (electrons/cm^2-sec -sr) with energies greater than 2 MeV by the SWPC Primary GOES satellite.

The Hp plot contains the five minute averaged Hp magnetic field component in nanoteslas (nT) as by the SWPC Primary GOES satellite. The Hp component is parallel to the spin axis of the satellite, which is nearly parallel to the Earth's rotation axis.

The Estimated 3-hour Planetary Kp-index is derived at the NOAA Space Weather Prediction Center using data from the following ground-based magnetometers: Boulder, Colorado; Chambon la Foret, France; Fredericksburg, Virginia; Fresno, California; Hartland, UK; Newport, Washington; Sitka, Alaska. These data are made available thanks to the cooperative efforts between SWPC and data providers around the world, which currently includes the U.S. Geological Survey, the British Geological Survey, and the Institut de Physique du Globe de Paris.

The data included here are those now available in real time at the SWPC and are incomplete in that they do not include the full set of parameters and energy ranges known to cause satellite operating anomalies. The proton and electron fluxes and Kp are 'global' parameters that are applicable to a first order approximation over large areas. H parallel is subject to more localized phenomena and the measurements generally are applicable to within a few degrees of longitude of the measuring satellite.



Weekly GOES Satellite X-ray and Proton Plots
Week Beginning 12 March 2018

The x-ray plots contains five-minute averages x-ray flux (Watt/m^2) as measure by the SWPC primary GOES X-ray satellite, usually at West 105 longitude, in two wavelength bands, 0.05 - 0.4 and 0.1 - 0.8 nm. The letters A, B, C, M and X refer to x-ray event levels for the 0.1 - 0.8 nm band.

The proton plot contains the five-minute averaged intergral flux units (pfu = protons/cm^2 -sec -sr) as measured by the primary SWPC GOES Proton satellite for each of the energy thresholds: >1, >10, >30, and >100 MeV. The P10 event threshold is 10 pfu at greater than 10 MeV.

Preliminary Report and Forecast of Solar Geophysical Data (The Weekly)

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Space Weather Prediction Center
325 Broadway, Boulder CO 80305

Notice: The 27-day Outlook, Satellite Environment, X-ray and Proton plots have been redesigned. Comments and suggestions are welcome SWPC.Webmaster@noaa.gov

The Weekly has been published continuously since 1951 and is available online since 1997.

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http://spaceweather.gov/ftpmenu/ -- Some content as ascii text
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